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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/594,171 | 06/15/2000 | Eugene P. Marsh | M4065.132/P132 | 8887 |
| 24998 | 7590 | 05/14/2004 | | |
| DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP 2101 L STREET NW WASHINGTON, DC 20037-1526 | | | EXAMINER | |
| | | | ECKERT II, GEORGE C | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2815 | |

DATE MAILED: 05/14/2004

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 04302004

Application Number: 09/594,171

Filing Date: June 15, 2000

Appellant(s): MARSH, EUGENE P.

MAILED

MAY 14 2004

GROUP 2800

Mark J. Thronson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed February 18, 2004

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

Appellant's summary of their invention contained in the brief is correct. However, the *Summary of Invention* section also contains information about the prior art that is deficient insofar as it misconstrues what was previously taught in the art. Briefly, appellant has mischaracterized the prior art by stating that prior forming techniques were "*unable* to achieve good step coverage" (Br. at 4) and that the prior art methods "*fail* to result in a platinum ... film having a uniform thickness" (Id.) (emphasis added). This directly contradicts appellant's specification which teaches that the prior art suffered drawbacks by being "*unable to consistently* create a continuous uniformly thin platinum film that additionally has good step coverage" (Spec. p. 1, lines 17-19). This will be further addressed in the arguments section below.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with. Although appellant has satisfied the first part of 37 C.F.R. §1.192(c)(7) by including a statement that the claims do not stand or fall together, the second requirement of the rule has not been met. Despite assertions to the contrary, appellant has not explained in the arguments section (Br., section VIII) why the claims of the groups are believed to be separately patentable beyond merely pointing out differences in what the claims cover. For example, regarding asserted group II (claims 81 and 82), appellant first argues the allowability of those claims based on the arguments of the independent claim, *the claim of group I*, and then merely points out that the claims of group II contain limitations not in the claims of the other groups. Appellant's argument in full as to the separate patentability of claim 81 states: "As discussed above with respect to [the group I claim], Xing fails to teach or suggest [the limitations of the group I claim] much less [the limitations of claim 81]" (Br. pp. 11 and 14). This is all that is argued with respect to the group II claims. This is merely a statement pointing out differences in what the claims cover and does not support an independent grouping of the claims.

(8) ClaimsAppealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

| | | |
|-----------|-------------------|---------|
| 6,069,697 | Xing et al. | 7-2000 |
| 5,566,045 | Summerfelt et al. | 10-1996 |

(10) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claims 79-82, 85-87, 89 and 92 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6,090,697 to Xing et al. Xing et al. teach, with reference to figure 3, a capacitor comprising:

a substrate having a trench (see the trench in fig. 3 formed in layer 316);

a barrier layer 310 disposed over a surface of the trench;

a first electrode 304 in contact with the barrier layer at a sidewall region;

a dielectric layer 312 in contact with the first electrode and the barrier layer and

a second electrode 314 in contact with the dielectric layer at a sidewall region, wherein

the first electrode comprises a platinum group metal film. Regarding the limitation that the

platinum group metal is uniform, Xing et al. teach in figure 3 that the electrode 304 is formed

uniformly (having a constant thickness) over layer 310. Regarding the limitation that the

platinum group metal is essentially free of carbon, Xing et al. make no mention as to the carbon

content of their final device and therefore, because carbon is detrimental to the device, it is

considered inherent that their electrode is essentially free of carbon. In the alternative, applicant

teaches (instant specification, page 3, lines 4-5) that processing in oxygen is known in the art

which reduces the carbon content of such layers. Finally, claim 79 includes a processing

limitation which does not further limit the structure of the claim. Specifically, claim 79 cites that

the platinum group metal film is an "oxygen annealed photo-decomposed" film. However, this

limitation is drawn to the process by which the capacitor is made. That is, the limitation cites

that the electrode is annealed in an oxygen environment and photo-decomposed. However, it is

the final product which is evaluated for patentability. Instantly, the claimed final product is one comprising a platinum group electrode – that is, the electrode is formed of platinum, rhodium, iridium, etc. However, such platinum group electrode is taught by Xing et al, including platinum and the additional materials.

Note that a “product by process” claim is directed to the product *per se*, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product *per se* which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Xing et al. further teach that the first electrode 304, which is the lower electrode (claim 82), may be formed from Pt (claims 80 and 81), Rh (claim 86), Pd (claim 87), Ir (claim 89) or Ru (claim 92), (see col. 4, lines 45-58). With regard to claim 85, these metals are inherently oxidation resistant.

Claims 88, 90 and 91 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6,090,697 to Xing et al. and further in view of US 5,566,045 to Summerfelt et al. Xing et al. taught or made obvious the device of

claim 79 as discussed above but did not expressly teach that the electrode may be formed of Os, Au or Ag. Summerfelt et al. teach that such metals are commonly used to form capacitor electrodes (see col. 17, lines 3-7. See also element 34 – bottom electrode – in the table starting in column 10).

Xing et al. and Summerfelt et al are combinable because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the additional materials taught by Summerfelt et al. in the device of Xing et al. The motivation for doing so is that such metals are well known and obvious material choice substitutions which allow greater latitude in the device design (e.g. different materials may be chosen based on specific parameters or even mere availability). Therefore, it would have been obvious to combine Xing with Summerfelt et al. to obtain the invention of claims 88, 90 and 91.

(11) Response to Argument

A. Background

i. The Nature of Appellant's Invention

Before appellant's arguments are specifically addressed, it is believed helpful to consider the nature of appellant's invention. As summarized in appellant's brief, the instant *claims* are drawn to a capacitor device. (Br. at 3). However, the nature of the instant invention is not so much to the capacitor *product*, but to the *process* by which the capacitor is made. This is clearly seen in appellant's specification. Beginning with the title: "Nucleation and Deposition of Pt Films Using Ultraviolet Irradiation."¹; continuing with the Field of Invention: "This invention relates generally to the chemical vapor *deposition* (CVD) of platinum group metals on an

¹ Specification – Cover Page.

integrated circuit structure as a continuous film and with good step coverage.”² (emphasis added); with the Discussion of the Related Art: “A *process* is needed to *deposit* a platinum group metal having good step coverage and where the platinum film can be patterned to avoid an extra etching step.”³ (emphasis added); with the Summary of the Invention: “The present invention ... provides a CVD *method* which *produces* a smooth, uniform, continuous film of a platinum group metal ... The invention includes *depositing* the platinum metal group in conjunction with ultraviolet light *using* a CVD *process*...”⁴ (emphasis added) and finally throughout the Detailed Description: “An exemplary apparatus used in the *process* for *depositing* a platinum group metal according to one embodiment of the present invention is described below.”⁵; “The CVD *deposition* of the invention”;⁶ “The *method* of the present invention is preferably used to *deposit* a platinum metal film”;⁷ “The *method* for CVD *deposition* of a platinum group metal according to the present invention”;⁸ “The invention provides a *method of deposition* of platinum group metals[.]”⁹ (emphasis added in all occurrences). Indeed, it is not until page 13 of the 15½-page specification that appellant provides an “example” of a capacitor’s lower electrode “*formed* of platinum according to the present invention.”¹⁰ (emphasis added). In all, the instant invention is drawn to the method by which a platinum layer is formed. The use of the method to form a capacitor electrode is merely exemplary.

² Specification, page 1, lines 5-7.

³ Id., page 1, lines 14-16.

⁴ Id., page 3, lines 15-22.

⁵ Id., page 6, lines 21-23.

⁶ Id., page 10, line 10.

⁷ Id., page 10, line 15.

⁸ Id., page 10, lines 22-23.

⁹ Id., page 12, lines 12-13.

¹⁰ Id., page 13, lines 11-12.

The reason for the lengthy discussion regarding the nature of appellant's invention is to further point out what was admittedly known in the art. Appellant teaches, in the *Discussion of Related Art* section, that "[c]onventional methods of depositing platinum films suffer drawbacks in that these methods are unable to *consistently* create a continuous uniformly thin platinum film that additionally had good step coverage."¹¹ (Emphasis added). Appellant acknowledges sputtering as a conventional method.¹² The same paragraph also states that it was "difficult" to create a uniform platinum film using chemical vapor deposition. This is also summarized later in the same section: "[t]hus, with conventional methods it is *difficult* to achieve both good step coverage and a smooth continuous film . . ."¹³ In all, contrary to appellant's assertion in the instant appeal brief, the prior art was not "unable" to achieve good step coverage nor did it "fail" to achieve a uniform film. Rather, it was merely difficult to do so consistently.

ii. The Final Rejection

The final rejection was made under the alternative bases of anticipation and/or obviousness over Xing et al. (Xing). The alternative bases were asserted due to the claim's recitation of a product-by-process limitation. Indeed, the product-by-process limitation was the source of contention throughout prosecution¹⁴ and is now a primary focus of argument in the appeal brief. The claim limitation in question states that one of the first and second capacitor electrodes comprises "a uniform, essentially carbon-free oxygen annealed photo-decomposed platinum group metal film." The limitations "uniform," "essentially carbon-free" and "platinum

¹¹ Specification, page 1, lines 17-19.

¹² Id., lines 19-20.

¹³ Id., page 3, lines 8-9.

¹⁴ See appellant's response of 12/21/01, p. 6; response of 6/11/02, pp. 4-5; response of 9/22/03, pp. 6-7.

group metal film" do recite structure and were so treated in the rejection. However, as will be argued at length below, the limitation "oxygen annealed photo-decomposed" recites a process.

Of course, as the Court has established and the MPEP directs, a claim drawn to a product may include processing limitations (See *In re Thorpe*, *In re Marosi*, *In re Fessman*, *In re Brown*, etc. all cited above and MPEP §2113). When such a limitation in product-by-process form is included in a product claim, the limitation must be considered for what it implies to the final structure of the device. *In re Luck*, 177 USPQ 523 (CCPA 1973) ("To the extent these process limitations distinguish the *product* over the prior art, they must be given the same consideration as traditional product characteristics." Emphasis in original). But, a claim drawn to a product that is already known in the art does not become patentable merely by citing a new method of making it, even though the process itself may be patentable. *In re Thorpe*, 227 USPQ at 966. Such is the situation here. The Patent Office has acknowledged that appellant's platinum deposition method is novel by allowing this application's parent (now US 6,204,178). However, unless the novel process imparts a structure not known in the art, a product claim including that process is still properly rejected. Here, the process adds no unique structure to the product that was taught by Xing. This was shown in the final rejection and will be shown in detail below.

B. Response to Appellant's Arguments

i. Xing does Teach or Make Obvious a Uniform, Essentially Carbon-Free Platinum Film

First of all, there is no contention by appellant that the general capacitor structure as claimed is not taught by Xing. As pointed out in the rejection, Xing teaches in figure 3 the structure of instant claim 79 including a trench, a barrier layer, and two electrodes separated by a dielectric where one electrode is a platinum group metal. Appellant's arguments are aimed at

Xing's purported failure of teaching or suggesting a "uniform, essentially carbon-free oxygen annealed photo-decomposed platinum group metal film." (Br. page 8). Appellant's support for that assertion is that Xing's platinum layer is formed by "conventional sputter deposition" and because of that process, Xing "will not have a uniform thickness on the sidewalls of the trench capacitor." (Id.). Moreover, the electrode layer will not be "essentially carbon-free" at the sidewall region. (Id.). These arguments simply cannot stand in light of what Xing teaches, what is admitted to by appellant and the broad nature of the limitations.

a. Xing Teaches or Makes Obvious a *Uniform* Electrode

Regarding the limitation that the platinum electrode film be "uniform," Xing clearly teaches such a uniform film in figure 3. There, Xing teaches a first or bottom electrode 304 which, as shown in the figure, has a constant or "uniform" thickness. Xing also teaches that the dielectric 312 is uniform as is the top electrode 314. There is nothing in either figure 3 or Xing's specification that teaches or even suggests otherwise.

Appellant does not agree that Xing's electrode is uniform but can only support that argument by pointing to Xing's method of making the electrode. Appellant states that Xing uses a conventional sputter method, which produces an electrode that "*will not* have a uniform thickness on the sidewalls of the trench." (Br. at 8, emphasis added). However, appellant does not support that argument beyond its mere assertion. The implication, as can only be assumed, is that a sputtering method makes it *impossible* to render a "uniform" platinum film. But this directly contradicts what appellant has admitted in his specification – that a conventional sputtering process *does* allow for a uniform platinum film to be formed. See again appellant's

specification, e.g., page 1, lines 17-20 where appellant merely states that *consistently* forming a uniform film is *difficult*, not impossible.

Furthermore, the limitation “uniform” must be broadly construed. Xing does show in figure 3 a uniform electrode and provides no teaching or suggestion to the contrary. As such, the only support for a distinguishing reading of “uniform” in the instant claim must come from appellant’s specification. However, there is nothing in the instant specification that distinguishes a “uniform” film formed by appellant’s method from the uniform film taught by Xing as formed by sputtering. For example, appellant has not pointed out how the instant method may reduce surface asperities, or eliminate high and low points or asserted any other *structural* difference between the instant film and that taught by Xing. Indeed, appellant cannot point to any such evidence for there is none. Rather, the specification only says that a sputtering process makes it “difficult” to achieve such uniformity versus the instant method which makes it easier. The specification does *not* say that a uniform film is impossible with a sputtering process and importantly does not explain any *structural* difference resultant from one process versus the other. As such, the final product including a uniform electrode is considered admittedly known in the art and taught by Xing.

b. Xing Teaches or Makes Obvious an *Essentially Carbon-Free* Electrode

Appellant makes similar arguments to those above, now regarding the limitation that the platinum metal film is “essentially carbon-free.” Appellant asserts that the electrode film of Xing is not carbon free but again does little more than make the assertion for support of the argument. The little more that appellant does state for support is that “conventional platinum layers have a relatively high carbon content” and points to the *summary of the invention* section

of the brief for support. (Br. p. 9). However, as pointed out already, appellant's instant *summary* does not comport with appellant's disclosure. In fact, appellant's generic statement regarding the high carbon content of *conventional* platinum layers finds no support from appellant's specification or that known in the art.

Appellant's specification does state that carbon content may be a problem in the prior art. However, to suffer that problem, many variables must line up. First, as taught by appellant, it is only during a chemical vapor deposition (CVD) process when carbon becomes a concern.¹⁵ Yet CVD is only one of *three* known processes which may be used to form a platinum film, the other two being vacuum deposition and sputtering.¹⁶ Furthermore, even if a CVD process is used, that process must be performed at a low temperature for carbon to become a problem.¹⁷ Though appellant does not explain how carbon becomes a problem in low temperature CVD, it is likely due to the organic precursors used during the CVD process. Indeed, the instant invention using organic precursors in a CVD process must be annealed in oxygen to remove the carbon. (See Spec., page 8, lines 10-20 for a list of the organic precursors, and page 11, lines 21-23 teaching oxygen annealing to remove the carbon). However, the specification provides no support for appellant's assertion that Xing's sputtering process will suffer the same carbon problem as found in a CVD process. Moreover, it is noted that sputtering is performed using an inert atmosphere with no organic precursors. See Ruska, pp. 249-51 (newly cited for evidence) for its explanation that sputtering is performed in an inert atmosphere. In all, neither appellant's specification, nor any other teaching, support the argument that Xing's platinum film will suffer any carbon problem.

¹⁵ Specification, page 3, lines 1-3.

It was noted in the final rejection to support anticipation that Xing makes no mention of carbon. Appellant makes much of this position, stating that it is "untenable" and not supported by the evidence. (Br., page 9). Yet, as clearly shown above, it is the only position that *is* supported by the evidence. Furthermore, the limitation "essentially carbon-free" is being used by appellant to claim the invention by what is not there, thus requiring the examiner to prove a negative. Absent a showing by appellant that a sputtering process necessarily introduces carbon in the final film, the lack of such statement by Xing must surely support Xing's anticipation.

Second, the limitation "essentially carbon-free", like that of "uniform" must be broadly considered. Appellant's specification has not taught any metric for determining what constitutes "free" or "essentially free" or neither of these. As such, even if it must be assumed *arguendo* that the sputtering process of Xing somehow includes random carbon atoms, it anticipates the limitation due to its breadth. Lastly, the limitation "essentially carbon-free" is still a result of appellant's "oxygen annealed, photo-decomposed" process. The specification teaches that "photo-decomposition forms a platinum film with a high carbon content" and that "oxygen annealing removes the carbon[.]"¹⁸ Yet, appellant has provided no evidence that the process used by Xing will result in a structure that does not anticipate the structure claimed. Conversely, evidence to Ruska is here cited showing that the process of Xing will result in a film that *is* carbon free. In all, the limitation of an electrode layer "essentially carbon-free" is taught by Xing as shown by evidence in the record and that here cited for support.

¹⁸ Specification, page 1, lines 19-21.

c. Appellant's Limitation is a Product-by-Process Limitation

Appellant argues that the limitation "oxygen annealed photo-decomposed platinum group metal film" does not include processing limitations, is drawn solely to the product and recites distinct and defined structural characteristics. (Br., p. 9). For support, appellant calls to the Federal Circuit's decision in *Hazani v. U.S. Int'l Trade Comm'n*, 44USPQ2d 1358, 126 F.3d 1473 (Fed. Cir. 1997). However, that call goes unanswered by *Hazani* as will be discussed momentarily. First, appellant's claim will be briefly analyzed to show that it *is* using processing limitations to define the product.

The phrase "oxygen annealed photo-decomposed" is used by appellant to modify the limitation "platinum group metal film." This conclusion is the simple result of a plain reading of claim 79. It is uncontested that a platinum group metal film is a structure. However, the limitation "oxygen annealed photo-decomposed" is *not* a structure, it is a statement in the past tense of a process, the process of annealing in oxygen and the process of decomposition due to irradiation by light. This conclusion is not only supported by the plain reading of the words, it is taught on page 9, lines 12-16 of appellant's specification:

"In the first *method* according to the present invention, a substrate is placed in a CVD deposition chamber and the flow gas is then fed to the chamber. Once the substrate has been coated by the organic precursor, the organic precursor is *decomposed by irradiation with ultraviolet light* to form a platinum group metal film over the substrate. The substrate is then *annealed in an oxygen atmosphere* as described below." (Emphasis added to show processing steps).

Appellant puts forth no argument in support of treating the language as a product, aside once again from the mere assertion. Appellant does attempt an analogy between

¹⁷ Specification, page 3, lines 1-3.

¹⁸ Specification, page 11, lines 20-23. See also sentence bridging spec. pages 7-8; and page 11, lines 13-15.

the instant limitation and the limitation analyzed by the Court in *Hazani*. There, the Court found that the limitation drawn to a field plate with a “chemically engraved” surface was drawn to a product, stating that the claims were “best characterized as pure product claims, since the ‘chemically engraved’ limitation, read in context, describes the product more by its structure than by the process used to obtain it.” The analogy to *Hazani* is woefully misplaced.

Hazani itself does not expressly provide a test for determining if a claim limitation is in product-by-process form or not. Rather, *Hazani* seems to support a case-by-case analysis where the limitations are read in context to determine whether they describe the product more by its structure or the process used to obtain it. Instantly, reading appellant’s limitation in context, or even out of context for that matter, clearly supports treating “oxygen annealed photo-decomposed” as a process used to define a product. The limitation recites *no* physical structure nor are the words commonly used to describe a structure *e.g.* an “engraved” surface. Nor does the claim easily conjure up visions of what the processed product will look like. In *Hazani*, the phrase “chemically engraved,” read in context as describing a surface, easily brings to the mind of the reader the structure being claimed; for example a roughened surface. And such was indeed the case in *Hazani* where the specification described a chemically engraved surface as “textured with asperities.” *Hazani*, 126 F.3d at 1479. However, such vision is not forthcoming from the phrase “oxygen annealed, photo-decomposed.”

The Court has elaborated on *Hazani* in *3M Innovative Properties Co. v. Avery Dennison Corp.*, 69 USPQ2d 1050, 350 F.3d 1365, 1371, (Fed. Cir. 2003). There, the

Court stated "words of limitation that can connote with equal force a structural characteristic of the product or a process of manufacture are commonly and by default interpreted in their structural sense, unless the patentee has demonstrated otherwise." (In an infringement action, Avery attempted to construe the term "superimposed" as a product-by-process limitation to avoid liability). This clarification certainly does not support appellant's position. First, appellant has clearly taught in the specification, as shown in the quoted section on the previous page, that the limitation is describing a process. Furthermore, it is not seen how appellant could argue that the limitation "oxygen annealed photo-decomposed" can connote with equal force a structural characteristic *and* a process of manufacture. It connotes *only* a process of manufacture for it certainly is not known what an "oxygen annealed photo-decomposed" would look like. In all, appellant's arguments that the limitation is not in product-by-process form are simply not persuasive.

d. All Limitations Were Assessed for the Structure They Imply

Appellant argues that even if the limitation *is* a product-by-process limitation, it still must be considered for the structure it implies. Br., p. 10, citing *In re Garnero*, 162 USPQ 221 (CCPA 1979). While the Court's holding is, of course, conceded, appellant's reliance on it is not persuasive. As discussed above, the limitation *was* considered for all it implies. However, it implies no more than what is already structurally claimed. The specification teaches that an oxygen annealed, photo-decomposed layer, picks up carbon during the photo-decomposition

which carbon is released by annealing in oxygen.¹⁹ The structure implied is an "essentially carbon-free" layer. As discussed above, such layer is taught by Xing.

Appellant argues however, that such a layer is distinct because it is deposited onto the barrier layer without oxidizing the underlying barrier layer during the annealing step. The implication is that Xing's layer must have oxidized the barrier. This is unpersuasive for at least the following reasons. First, if Xing taught a device with an oxidized barrier layer, such oxidation would likely cause high resistance and thus little conduction between the barrier layer and the bottom electrode. This in turn would cause little conduction between the capacitor and the transistor it is meant to be in electrical contact with. In all, Xing's device would not function. Secondly, as taught by Ruska, a sputtering deposition process has the distinct advantage of *removing* any native oxide that may have formed on the substrate prior to deposition. As such, to argue that the instant processing limitation provides a product distinct from that taught by Xing is not persuasive.

ii. Appellant's Groups II and III are Likewise Anticipated and/or Obvious.

In the event that the claims of Groups II and III are considered to stand or fall separately, the following arguments are made in response to appellant's. As discussed above, Xing teaches the device of claim 79. With regard to the limitations of claims 81 and 82, Xing also teaches that the first electrode is the lower electrode. With regard to claim 85, Xing teaches the electrode is formed of a platinum group metal which type of metal is inherently oxidation resistant. Appellant's arguments to the contrary are not persuasive.

¹⁹ Specification, page 9, lines 12-16.

iii. Appellant's Arguments as to Obviousness

Appellant has addressed the rejection over Xing as two separate rejections, one under anticipation and one under obviousness. This seems to misconstrue the rejection which was made under alternative bases due to the fact of appellant's product-by-process limitation as discussed at length above. Such alternative bases rejections are sanctioned by the Court as discussed in MPEP §2113. What that section also points out is that when such a rejection has been made and the PTO has established a reasonable basis that the final structure as claimed appears to be taught by the prior art (here, Xing), the burden shifts to applicant to provide evidence that the cited process creates a final product distinct from that applied in the rejection. Here, no such evidence has been provided. In fact, the only additional evidence provided is cited in this answer and shows that the sputtering process of Xing provides a product like that produced by appellant. Although the appellant's arguments have been thoroughly treated above, Appellant's arguments regarding obviousness will here be addressed.

The final rejection stated that, in the event Xing did not anticipate appellant's "essentially carbon-free" product, it remained obvious because annealing in an oxygen environment, which reduces carbon content, was known and motivated in the prior art as admitted by appellant (citing to applicant's spec., p. 3, lines 4-5). Appellant now argues that if Xing's process were performed in an oxygen environment, the layer would not be uniform because it would suffer a "pinch-off" effect like that shown by appellant in figure 1. Notably, the argument is to a secondary consideration - that it's not obvious to form the layer of Xing as essentially carbon-free because making it carbon free would cause it not to be uniform. The argument is not persuasive. First, as the evidence shows, a sputtering process, like that used by Xing, is

performed in an inert environment and carbon is not problematic. Thus, Xing's silence on the issue may, here, be construed essentially as a teaching of the negative limitation. Second, the capacitor structure of Xing has a tapered opening, wider at the top than the bottom, so that, even if so much oxygen were added as to cause uncontrolled platinum film growth and result in appellant's "pinch-off" problem, which appellant teaches is systematic in a "deep" container capacitor having no taper,²⁰ it is apparently solved by Xing's taper. Third, appellant's specification *still* admits that uniform, essentially carbon-free layers were known. In all, the limitation is considered anticipated by Xing's layer which is formed by sputtering, considered obvious since the secondary considerations are not persuasive, or simply considered admitted by appellant.

On page 13 of the brief, appellant argues that "the addition of oxygen in a sputtering process would result in a platinum group metal film having a high carbon content, i.e., not a uniform, essentially carbon-free oxygen annealed photo-decomposed platinum group metal film." It is unclear how this statement is supported by anything in the record or otherwise. Appellant points to nothing in the specification, the record in general or any additional evidence to support the assertion. Rather, the statement is directly at odds with appellant's specification where it is taught that the addition of oxygen is known to reduce carbon content.²¹ Also, as taught by Ruska, sputtering is performed in an inert environment which does not use or produce carbon. In all, appellant's contention that sputtering in oxygen would create a high carbon content is simply not persuasive.

²⁰ Specification, page 2, lines 8-11.

²¹ Specification, page 3, lines 4-5.

Appellant next, and for the first time, makes the bold assertion that the rejection must fail because the prior art is not enabled (Xing has been cited since March 21, 2002). Appellant cites case law supporting the underlying assertion that without enablement, there can be no obviousness, with which the examiner agrees. The examiner also agrees with appellant's further citation that secondary evidence may be used to show the public did have possession of the method of making the article. However, the examiner cannot agree with appellant's assertion that the rejection fails because no secondary evidence was presented showing the public had possession of the method of making the claimed capacitor with its electrode comprising a uniform, essentially carbon-free oxygen annealed photo-decomposed platinum group metal film. Quite simply, Xing shows that the public had possession of the method of making a uniform, essentially carbon free capacitor platinum group metal film. Moreover, appellant's specification *admits* that the public had possession of the method of making a uniform, essentially carbon-free platinum group metal film, although appellant does state that the public had problems with the method's consistency.²² Perhaps the public did not have possession of using an oxygen annealed photo-decomposed *method* to make such a product (as best evidenced by the Office's granting of a patent to that effect). However, the final *product* as claimed was known, was in possession of the public and is therefore properly rejected. Appellant's arguments to the contrary are simply not persuasive.

Appellant also argues on page 15 that the obviousness rejections over Summerfelt, of claims 88, 90 and 91 fail because Summerfelt, like Xing teaches a sputter deposition method. As such, Summerfelt does not cure appellant's asserted failings of Xing by teaching a uniform,

²² Specification, page 1, lines 17-19.

essentially carbon-free layer. Because Xing *does* teach that layer, the arguments as to Summerfelt are not persuasive. Xing in view of Summerfelt do teach all the limitations of claims 88, 90 and 91 and appellant's arguments are not persuasive.

Finally, on page 14, appellant "separately" argues the patentability of the group II and III claims. These claims are not considered to stand or fall separately from the group I claims which were argued above. However, if those claims do stand or fall on their own, the arguments here may be considered. First, appellant's arguments regarding claim 79 are not persuasive. Furthermore, with regard to claims 81 and 82, Xing does teach that the uniform, essentially carbon-free electrode comprises the first or bottom electrode of the capacitor, as shown by element 304 in figure 3. Regarding claim 85, that the platinum group metal film is oxidation resistant is considered an inherent characteristic of the material.

C. Conclusion

In conclusion, appellant has made much of the process by which the instant device is made. Indeed it was not until the most recent amendment of the claims that appellant added the limitations "uniform" and "essentially carbon-free" relying previously solely on the asserted novel method of manufacture. However, when a product is known in the art, claims to that same product do not become patentable simply by including limitations drawn to a novel process of making it. This is simply telling evidence for having different statutory classes of invention. In the instant case, Xing teaches the structure as claimed including a uniform and carbon free layer. The evidence of record, notably appellant's specification, supports that conclusion as does the newly cited evidence to Ruska. The product was known in the art and cannot be patented again.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


GEORGE ECKERT
PRIMARY EXAMINER

April 29, 2004

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